

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
New ICO Services G.P.)	File No. SAT-MOD-20051021-00206
)	SAT-AMD-20060727-00083
Application for Modification of)	
Authority for Use of the 2 GHz Band to Provide)	
Mobile Satellite Service)	Call Sign: S2697
)	
)	

MEMORANDUM OPINION AND ORDER

Adopted: December 19, 2006

Released: December 20, 2006

By the Chief, Satellite Division, International Bureau:

I. INTRODUCTION

1. By this Order, we grant New ICO Satellite Services G.P.'s (ICO) applications to modify its reservation of spectrum by adding a second geostationary (GSO) satellite to its 2 GHz Mobile Satellite Service (MSS) system.¹ ICO is authorized to locate its satellite, GS-2, at the 114.75° W.L. orbital location. We find that grant of these applications will allow ICO to enhance the performance of its MSS system. We, however, deny ICO's request for the Commission to defer action on its waiver to use C-band frequencies for limited or emergency telemetry, tracking, and command (TT&C) operations at the 114.75° W.L. orbital location. Rather, we deny the request because it presents significant interference problems to nearby satellites.

II. BACKGROUND

2. In July 2002, the Commission granted ICO's request for a reservation of spectrum for a non-geostationary satellite orbit (NGSO) system in the 2 GHz band.² In May 2005, the International Bureau authorized ICO to modify its system to change to a one-satellite GSO system, and operate a satellite at the 91° W.L. orbital location.³ The Bureau subsequently granted ICO's authority to move the satellite to 92.85°

¹ "2 GHz MSS" refers to MSS using frequencies in the 2000-2020 MHz uplink band and 2180-2200 MHz downlink band for service link transmission, *i.e.*, transmission between the satellite(s) and mobile earth stations. *See* Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, *Report and Order*, IB Docket No. 99-81, 15 FCC Rcd 16127 (2000) (*2 GHz MSS Report and Order*).

² This authorization was granted to ICO's predecessor-in-interest, ICO Services Limited. *See* ICO Services Limited, *Order and Authorization*, 16 FCC Rcd 13762 (Int'l Bur. and OET 2001) (*ICO Authorization Order*).

³ ICO Satellite Services G.P., *Memorandum Opinion and Order*, 20 FCC Rcd 9797 (Int'l Bur. 2005) (*ICO Modification Order*).

W.L.⁴ ICO seeks to expand its system with a second GSO satellite, located at the 114.75° W.L. orbital location.⁵

3. ICO asserts that adding a second GSO satellite will allow it to enhance the performance of its system and improve signal quality. ICO states that it will use its authorized spectrum reservation and operate its GS-2 satellite consistent with the technical parameters in the *ICO Modification Order*. ICO also maintains that its spectrum reservation dedicates a specific amount of bandwidth in the 2 GHz MSS frequency band for the ICO system, that adding a satellite at 114.75° W.L. does not require any additional bandwidth, and so does not raise any interference or coordination issues with respect to service link operations. The second satellite, ICO states, will be technically identical to the 2 GHz GSO satellite that ICO is authorized to operate at 92.85° W.L.⁶ Specifically, the GS-2 satellite will operate its service links on assigned frequencies in the 2 GHz band, and its feeder links on 750 megahertz in the Ka-band.⁷ ICO further states that the services provided by GS-2 will be consistent with the ICO satellite currently authorized to provide service.⁸

4. ICO originally requested a waiver of section 25.202(g) of the Commission's rules to permit it to use C-band frequencies for TT&C operations under limited or emergency circumstances.⁹ ICO seeks to use 1 megahertz of spectrum within each of the 5925-5930 MHz and 6420-6425 MHz bands for telecommand purposes, and 300 kilohertz of spectrum within each of the 3700-3705 MHz and 4195-4200 MHz bands for telemetry purposes. ICO states it will use these C-band frequencies during the GS-2 satellite's transit to its assigned orbital location. Thereafter, it would use the C-band frequencies in the event of a spacecraft emergency involving the failure –either temporary or permanent – of its Ka-band TT&C subsystem.¹⁰ ICO notes that Satelites Mexicanos (SatMex) uses the C-band frequencies at the 113° W.L. and 116.8° W.L. orbit locations. ICO states it will coordinate with SatMex to identify suitable frequencies for its proposed C-band TT&C operations.¹¹ Subsequently, in its amendment, ICO asked the Commission to defer action on this waiver request pending completion of frequency coordination with

⁴ New ICO Satellite Services G.P., *Memorandum Opinion and Order*, DA 06-2545 (released Dec. 19, 2006).

⁵ ICO initially filed an application to modify its spectrum reservation to operate its second satellite at the 115° W.L. orbital location. New ICO Satellite Services G.P., File No. SAT-MOD-20051021-00206 (*ICO Modification Application*). ICO subsequently amended this request to change its spectrum reservation to the 114.75° W.L. orbital location. New ICO Satellite Services G.P., File No. SAT-AMD-20060727-00083 (*ICO Amended Application*).

⁶ *ICO Modification Application* at 3.

⁷ ICO proposes to use the 29.25-30 GHz (space-to-Earth) and 18.55-18.8 and 19.7-20.2 GHz (Earth-to-space) for feeder link transmissions and to use 29.999 GHz and 20.199 GHz for on-station tracking, telemetry, and control transmissions.

⁸ *ICO Modification Application* at 4.

⁹ *ICO Modification Application* at 4.

¹⁰ *ICO Modification Application* at 4.

¹¹ *ICO Modification Application* at 4.

other satellite operators.¹² No comments or objections were filed in response to the applications.¹³

III. DISCUSSION

5. To promote competition, flexibility, and technical innovation, the Commission leaves spacecraft design decisions to the system operators, providing these decisions are consistent with regulatory objectives. Accordingly, the Commission consistently grants applications to modify satellite systems when a proposed modification presents no significant interference problem and conforms to the Commission's rules and policies.¹⁴

A. Qualifications

6. All applicants requesting authority to launch and operate a satellite space station must present information sufficient to establish their legal, technical, and financial qualifications to hold a Commission license. The regulations set forth in Part 25 of the Commission's rules govern MSS applicants and licensees. In granting ICO's initial 2 GHz reservation of spectrum we determined that ICO is qualified to hold a Commission license.¹⁵ In the *First Space Station Licensing Reform Order*, the Commission eliminated the financial requirements then in place and replaced them with a bond requirement.¹⁶ In addition, ICO states that its proposed satellite will be technically similar to its previously authorized satellite and will operate consistent with the technical parameters authorized in the *ICO Modification Order*.

B. Location

7. In the *2 GHz Report and Order*, the Commission adopted an arrangement to divide the 2 GHz MSS spectrum into segments of equal bandwidth based on the number of systems seeking assignments.¹⁷ Presently, ICO's reservation of spectrum is for 20 megahertz in the 2 GHz mobile satellite service – 10 megahertz in the uplink band, and 10 megahertz in the downlink band.¹⁸ Because ICO does

¹² *ICO Amended Application* at 3.

¹³ *Public Notice*, Policy Branch Information, Report No. SAT-00333 (Dec. 7, 2005), and *Public Notice*, Policy Branch Information, Report No. SAT-00381 (Aug. 18, 2006).

¹⁴ *ICO Modification Order*, 20 FCC Rcd at 9800. See also The Boeing Company, *Order and Authorization*, 18 FCC Rcd 12317, 12319 (Int'l Bur. 2003); GTE Spacenet Corp., *Order and Authorization*, 5 FCC Rcd 4112 (CC Bur. 1990); and Teledesic LLC, *Order and Authorization*, 14 FCC Rcd 2261, 2264 (Int'l Bur. 1999).

¹⁵ *ICO Authorization Order*.

¹⁶ Amendment of the Commission's Space Station Licensing Rules and Policies, Mitigation of Orbital Debris, *First Report and Order and Further Notice of Proposed Rulemaking in IB Docket No. 02-34*, and *First Report and Order in IB Docket No. 02-54*, 18 FCC Rcd 10760 (2003).

¹⁷ *2 GHz Report and Order*, 15 FCC Rcd at 16138.

¹⁸ In the *ICO Modification Order*, the Bureau granted ICO access to 4 megahertz of continuous spectrum in each direction of transmission for service link operations. *ICO Modification Order*, 20 FCC Rcd at 9806. Subsequently, the Commission adopted an order redistributing spectrum returned or forfeited by previous licensees, resulting in a total of 20 megahertz of spectrum for each of the two current licensees, ICO and TMI Communications, in the 2 GHz Mobile Satellite Service. See Use of Returned Spectrum in the 2 GHz Mobile (continued....)

not intend to increase its reservation of spectrum, its proposed modification to operate at 114.75° W.L. will not cause any increased risk of interference to the other satellite operators in the 2 GHz band.

C. Telemetry, Tracking, and Control Operations

8. We find that ICO's proposed use of C-band frequencies for orbit transfer and emergency operations, however, presents a significant interference problem as SatMex uses the C-band frequencies at the 113° W.L. and 116.8° W.L. orbital locations. In its modification application, ICO requested a waiver of section 25.202(g) of the Commission's rules to permit use of C-band frequencies for its TT&C operations under limited or emergency circumstances.¹⁹ ICO's proposed use is for 1 MHz of spectrum within the 5925-5930 MHz and 6420-6425 MHz for telecommand purposes and to use 300 kHz of spectrum within the 3700-3705 MHz and 4195-4200 MHz bands for telemetry purposes.²⁰ ICO states that it will coordinate with SatMex at its neighboring orbital locations to identify suitable frequencies for emergency TT&C use. Assuming successful coordination, ICO states its proposed C-band operations will not interfere with satellites licensed to serve the United States.²¹

9. Section 25.202(g) of the Commission's rules requires FSS systems operators to conduct their TT&C functions in the same frequency bands in which they are providing service.²² The rule further provides that frequencies, polarization, and coding shall be selected to minimize interference into other satellite networks and within their own satellite system. The purpose of the rule is to simplify the coordination process among satellites at adjacent orbit locations by limiting the number of potentially affected operators to only those operators performing TT&C functions in the service bands. It also allows operators to maximize the efficiency of a system's TT&C operations.²³ As ICO notes, however, SatMex operates a C-band satellite at the 113° W.L. and 116.8° W.L. orbital locations. ICO's proposed TT&C operations would therefore undermine the purpose of the rule. Consequently, we find no reason to defer action on this waiver request and deny ICO's request for a waiver of section 25.202(g).

D. First-Come, First Served for Ka-band Feeder Link Request

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Satellite Service Frequency Bands, *Order*, IB Docket Nos. 05-220 and 05-221, 20 FCC Rcd 19696 (2005) (Petitions for Reconsideration pending).

¹⁹ It was also reserved spectrum for on station TT&C operations in the 29.999 GHz and 20.199 GHz bands. *ICO Modification Order*, 20 FCC Rcd at 9807.

²⁰ *ICO Modification Application*, Attachment A at 4

²¹ *ICO Modification Application*, Attachment A at 4.

²² 47 C.F.R. § 25.202(g) (telemetry, tracking, and telecommand functions for U.S. domestic satellites shall be conducted at either or both edges of the allocated band(s)).

²³ Amendment of the Commission's rules with Regard to the 3650-3700 MHz Government Transfer Band, *First Report and Order and Second Notice of Proposed Rulemaking*, IB Docket No. 98-237, 15 FCC Rcd 20488, 20538 (2000) (the rule effectively "limits FSS operators to operating TT&C links in the same frequency bands as their FSS operations"). The Commission may waive its rules for "good cause shown." 47 C.F.R. § 1.3. Generally, the Commission may grant a waiver of its rules if the relief requested would not undermine the purpose of the rule in question and would otherwise serve the public interest. *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969).

10. Under the Commission's rules, requests for feeder-link authority for GSO MSS satellite systems are classified as GSO-like for purposes of its satellite licensing procedures, and therefore considered on a first-come, first-served basis.²⁴ Modifications of GSO licenses and amendments to GSO-like applications proposing a new orbit location are also treated like new GSO-like satellite applications.²⁵ Accordingly, with respect to ICO's Ka-band feeder-link spectrum reservation, we consider ICO's request to relocate its satellite to 114.75° W.L. as a newly filed application.²⁶ ICO proposes to use the 29.25-30.0 GHz band for its feeder uplinks, and 18.55 GHz and 19.7-20.2 GHz bands for its feeder downlinks.

11. ICO's request for feeder-link authority may be granted if it is qualified to operate a satellite system and provide service in the United States, and its request would not cause harmful interference to a satellite system proposed in any previously filed application.²⁷ The Commission has previously found that ICO is qualified to provide satellite service in the United States. In addition, as a result of its *Amended Application*, ICO's proposed feeder link operations will be at least two degrees away from any co-frequency satellite operations.²⁸ Therefore, we grant ICO's request to modify its reservation of spectrum for its planned feeder links, as amended.²⁹

12. Future U.S.-licensed Ka-band earth stations that communicate with New ICO's GS-2 satellite must coordinate with U.S. Government systems in accordance with footnote US334 to the Table of Frequency Allocations.³⁰ This footnote requires coordination of commercial systems with U.S. Government GSO and NGSO satellites that are presently operating in the 17.8-20.2 GHz frequency band. These Government systems operate in accordance with the power flux-density limits prescribed in the

²⁴ *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10810-12.

²⁵ See 47 C.F.R. § 25.116(b), (d).

²⁶ See 47 C.F.R. § 25.137(f) (modifications and amendments of spectrum reservation requests filed by non-U.S.-licensed satellite operators are treated like modifications and amendments of U.S. licensees).

²⁷ 47 C.F.R. § 25.158(b). In addition, non-U.S.-licensed satellite operators seeking to enter the U.S. market must show that (1) their satellite system is in orbit or operating, (2) they have been granted a license from another administration, or (3) their satellite system has been submitted for coordination to the ITU. 47 C.F.R. § 25.137(c). ICO's amended application shows that the United Kingdom has submitted ICO's satellite system as amended to the ITU. *ICO Modification Application*, Attachment A at 2.

²⁸ *ICO Amended Application* at 3.

²⁹ ICO also requests a waiver of sections 25.116(b) and (d) of the Commission's rules to maintain its status in the application processing queue. 47 C.F.R. § 25.116(b) and (d). ICO states a waiver is justified because its operations at 114.75° W.L. will ensure compliance with the Commission's orbital debris mitigation requirements and two-degree spacing rule. *ICO Amended Application* at n.2. These reasons are insufficient to justify its waiver request. However, because no other applications were filed for the frequencies and location specified in ICO's amended request prior to the time ICO filed its amendment, its place in the queue was not affected by its amendment, and its waiver request is therefore moot.

³⁰ 47 C.F.R. § 2.106 US334. Government GSO space stations have been authorized by the National Telecommunications and Information Administration at 144° W.L., 141° W.L., 127° W.L., 69° W.L., 65° W.L., 60° W.L., 30° W.L., 24° W.L., 13° W.L., 10° W.L., 0° E.L., 44° E.L., 75° E.L., 82° E.L., 85° E.L., 92° E.L., and 110° E.L.

ITU Radio Regulations.³¹

13. New ICO must also comply with footnote US255 to the Table of Frequency Allocations, which prescribes power flux-density limits for the 18.6-18.8 GHz band to protect the Earth Exploration Satellite Service (passive).³²

E. Orbital Debris Mitigation

14. Section 25.114(d)(14) of the Commission's rules requires applicants for space station authorizations to submit a description of the design and operational strategies that it will use to mitigate orbital debris, including a statement detailing post-mission disposal plans for space stations at the end of their operating life.³³ Initially, ICO intended to place the GS-2 satellite at the 115° W.L. orbital location. ICO noted that it would be necessary to coordinate with XM Radio and SatMex to mitigate the possibility of collision with their satellites at 115° W.L. Subsequently, ICO determined that placing the satellite into permanent orbit at the 114.75° W.L. orbital location would avoid the need for any changes to the SatMex satellite at the 114.9° W.L. orbital position.³⁴ ICO states that the offset of .15° between the nominal position of SatMex is sufficient to ensure no physical collision between the two satellites is possible. In addition, ICO states that XM Radio operates XM-1 and XM-2 at 115° W.L. and 115.1° W.L., respectively, and is authorized to operate XM-4 at 115° W.L. The minimum offset of .15°, ICO states, is sufficient to avoid a physical collision between the satellites.³⁵ We find that ICO has undertaken sufficient measures to prevent in-orbit collisions and mitigate orbital debris.

F. Milestones

³¹ Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use, *Report and Order*, IB Docket No. 98-172, 15 FCC Rcd 13430, 13473 (2000) (*18 GHz Band Report and Order*). The power flux-density limits in the 18.3-18.6 GHz band are -115/-105 dB (W/m²) in any one megahertz band, depending on the angle of arrival. There are currently no power flux-density limits for the 19.7-20.2 GHz band. Letter from William T. Hatch, National Telecommunications and Information Administration, to Dale Hatfield, Chief, Office of Engineering and Technology, Federal Communications Commission (March 29, 2000).

³² 47 C.F.R. § 2.106 US255 (as revised in the *18 GHz Band Report and Order*, 15 FCC Rcd at 13489) states: In addition to any other applicable limits, the power flux-density across the 18.6-18.8 GHz band produced at the surface of the Earth by emissions from a space station under assumed free-space propagation conditions shall not exceed -95 dB (W/m²) for all angles of arrival. This limit may be exceeded by up to 3 dB for no more than 5 percent of the time.

³³ 47 C.F.R. § 25.114(d)(14).

³⁴ Letter to Robert G. Nelson, Chief, Satellite Division, from Suzanne Hutchings Malloy, Senior Regulatory Counsel, New ICO Satellite Services G.P. (April 12, 2006) (*ICO April Letter*). ICO submitted this letter in response to an inquiry from the Satellite Division regarding its orbital debris mitigation plan for the proposed 115° W.L. orbital location. Letter to Cheryl Tritt, ICO Satellite Services, from Robert G. Nelson, Chief, Satellite Division (March 27, 2006).

³⁵ *ICO Amended Application* at 2.

15. To ensure that licensees remain able and committed to implementing their planned satellites and do not hold scarce orbit/spectrum resources to the exclusion of other entrants, the Commission imposes milestone schedules on each licensed satellite. If a licensee fails to meet any of these milestones, the license becomes null and void. These milestones are set forth in section 25.164 of the Commission's rules, and are slightly different for GSO satellites and NGSO satellite constellations.³⁶ Licensees of GSO satellites must meet four milestones: 1) enter into a binding non-contingent contract to construct the licensed satellite(s) within one year of licensing; 2) complete critical design review within two years of licensing; 3) begin construction of the satellite(s) within three years; and 4) launch and operate the satellite(s) within five years of licensing.³⁷ In addition, licensees must demonstrate milestone compliance on or before each milestone date.³⁸ These milestones are incorporated as a condition of ICO's reservation of spectrum. Failure to comply with a milestone, file a certification of compliance, or filing a certification of non-compliance will result in automatic cancellation of ICO's reservation of spectrum for its satellite at 114.75° W.L. with no further action required on the Commission's part.³⁹

IV. CONCLUSION AND ORDERING CLAUSES

16. Based on the foregoing, we find that grant of New ICO's modification application, as amended, will serve the public interest, convenience and necessity.

17. Accordingly, IT IS ORDERED, that New ICO Satellite Services, G.P.'s Applications, File Nos. SAT-MOD-20050926-00182, SAT-MOD-20050927-00186, and SAT-AMD-20060505-00054 are GRANTED in PART and DENIED IN PART, as indicated herein. New ICO Satellite Services, G.P. is RESERVED radio frequency spectrum for its geostationary satellite to operate at the 114.75° W.L. orbital location, in the 2000-2020/2180-2200 MHz bands in the United States, subject to the Commission's rules, the conditions and milestones specified in ICO Satellite Services G.P., *Memorandum Opinion and Order*, 20 FCC Rcd 9797 (Int'l Bur. 2005), and the reservation of spectrum

³⁶ 47 C.F.R. § 25.164(a) and (b).

³⁷ 47 C.F.R. § 25.164(b).

³⁸ 47 C.F.R. § 25.164(c), (d), and (e).

³⁹ In the *ICO Modification Order*, the Bureau determined that ICO had satisfied the first two milestones for its first satellite. Due to concerns about ICO's timetable for completing construction, the Bureau imposed a number of intermediate milestones consistent with the performance schedule in its construction contract. The Satellite Division recently stated that ICO was in compliance with all of the milestones to date in its reservation of spectrum for the 92.85° W.L. orbital location. New ICO Satellite Services G.P., *Memorandum Opinion and Order*, DA 06-2545 (released Dec. 19, 2006). ICO's remaining intermediate milestones are: complete reference performance test by January 1, 2007, complete thermal vacuum test by March 1, 2007; launch satellite by July 1, 2007; and certify that the satellite is operational by July 17, 2007. On November 9, 2006, ICO requested an extension of these milestones to the following dates: complete reference performance test by April 30, 2007; complete thermal vacuum test by June 15, 2007; launch satellite by November 30, 2007; and certify entire system is operational by December 31, 2007. This request will be addressed in a separate order. See New ICO Satellite Services G.P., File No. SAT-MOD-20061109-00137. ICO's reservation of spectrum remains in effect pending Commission action on its milestone extension request.

specified in Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands, *Order*, IB Docket Nos. 05-220 and 05-221, 20 FCC Rcd 19696 (2005) (Petitions for Reconsideration pending).

18. IT IS FURTHER ORDERED, that New ICO Satellite Services G.P. is RESERVED radio-frequency spectrum in the 29.25-30.0 GHz (space-to-Earth) and 18.55-18.8/19.7-20.2 GHz (Earth-to-space) frequency bands, for feeder link transmissions and for on-station Tracking, Telemetry, and Control transmissions at 29.999 GHz and 20.199 GHz, in accordance with the technical specifications of its applications and the *ICO Modification Order*, and consistent with our rules, unless specifically waived, and subject to the following conditions:

a. All Ka-band downlink operations must be coordinated with U.S. Government systems in accordance with footnote US334 to the Table of Allocations, 47 C.F.R. § 2.106.

b. Ka-band downlink operations in the 18.6-18.8 GHz frequency band must comply with the power flux-density limits specified in footnote US255 to the Table of Frequency Allocations, 47 C.F.R. § 2.106.

19. IT IS FURTHER ORDERED, that New ICO Satellite Services G.P.'s request for waiver to conduct TT&C in the C-band during transit to the 114.75° W.L. orbital location or during emergencies IS DENIED.

20. IT IS FURTHER ORDERED, that New ICO Satellite Services G.P.'s request for waiver of 47 C.F.R. § 25.116(b) and (d), to maintain its status in the application processing queue, is DENIED.

21. IT IS FURTHER ORDERED, that this reservation of spectrum for the 114.75° W.L. orbital location shall become null and void in the event the space station is not constructed, launched, and placed into orbit in accordance with the technical parameters and terms and conditions of this authorization by the following dates:

Milestone	Deadline
Enter into a binding, non-contingent satellite Manufacturing contract	December 20, 2007
Complete Critical Design Review	December 20, 2008
Begin Physical Construction of the Satellite	December 20, 2009
Certify Entire System Operational	December 20, 2011

22. IT IS FURTHER ORDERED, that New ICO Services G.P. must file a performance bond with the Commission in the amount of \$ 3 million, pursuant to the procedures set forth in 47 C.F.R. § 25.165, within 30 days of the grant of this Order and Authorization.

23. This Order is issued pursuant to the Commission's rules on delegations of authority, 47 C.F.R. § 0.261, and is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Robert G. Nelson
Chief
Satellite Division
International Bureau